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United States Patent**6,743,578****Castro****June 1, 2004**

Method for the detection of specific nucleic acid sequences by polymerase nucleotide incorporation

Abstract

A method for rapid and efficient detection of a target DNA or RNA sequence is provided. A primer having a 3'-hydroxyl group at one end and having a sequence of nucleotides sufficiently homologous with an identifying sequence of nucleotides in the target DNA is selected. The primer is hybridized to the identifying sequence of nucleotides on the DNA or RNA sequence and a *reporter molecule* is synthesized on the target sequence by progressively binding complementary nucleotides to the primer, where the complementary nucleotides include nucleotides labeled with a fluorophore. Fluorescence emitted by fluorophores on single reporter molecules is detected to identify the target DNA or RNA sequence.

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